

Remark

Applicants respectfully request reconsideration of this application as amended. Claims 1, 3, 4, 7, 13 and 16 have been amended. No claims have been cancelled. Therefore, claims 1-26 are present for examination.

35 U.S.C. §112 Rejection

The Examiner has rejected claims 1-26 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The Examiner would appear to be concerned primarily with a description of how time of arrival (TOA) is measured. While the Examiner refers also to time difference of arrival (TDOA) this is not in the claims and will therefore not be discussed.

Claim 1, for example, refers to "a TOA (time of arrival) receiver to measure a propagation time delay for the signals from the transmitter."

In paragraph 45, as mentioned by the Examiner, it states, for example, that "a LMU-B measures the TOA or TDOA of mobile unit uplink signals based" on a particular uplink burst. The LMU-B is described in more detail in paragraph 46. A TOA receiver 140 measures "the propagation time delay between the mobile unit and LMU."

Applicants submit that this description is sufficient to allow a person of average skill in the art in 2002 to know how to measure the time that it takes for a particular signal to propagate from a mobile unit to a base station. (The LMU-B may be mounted to a base station.). Note that in Figure 5 the TOA receiver 140 sends "TOA RAW DATA MEASUREMENT to the Mobile Location Center.

The Examiner also mentions a "round trip delay." However, this is not in the claims. The specification does describe measuring the propagation time from the base station to the mobile using the LMU-A (see e.g. paragraph 47).

As to the repeaters, as shown in Figure 5, the TOA data comes from the TOA measurement receiver and the repeater tags come from the frequency discriminator. As described in paragraph 47, this information is combined with the geographical coordinates of the identified repeaters. Clearly, the mobile location center can use the locations of the repeaters in the propagation path to determine the distance to the first repeater in the chain and then use the TOA information to determine the distance from the first repeater to the mobile unit.

35 U.S.C. §112 Rejection

The Examiner has rejected claims 1-3 under 35 U.S.C. §112, second paragraph, as indefinite. Claim 1 has been amended in an effort to traverse this rejection.

35 U.S.C. § 103 Rejection

Sanderford and Levinson

The Examiner has rejected claims 1-10 and 13-26 under 35 U.S.C. §103(a) as being unpatentable over Sanderford, Jr. et al., U.S. Patent No. 4,799,062 ("Sanderford") in view of Levinson et al., U.S. Patent No. 5,223,816 ("Levinson").

In Sanderford, the repeaters measure the TOA and relay only the TOA to a central station. They do not repeat any uplink signal from a mobile unit, but instead repeat a downlink timing pulse from the central station.

Levinson is not a locating system. Instead each base station receives an alarm signal from a mobile or fixed alarm unit. A report of the alarm signal is sent to the central station along with a TOA. The TOA is used only to determine the closest base station to the alarm unit.

In for example, Claim 1, the transmitter signal is received through repeaters. Rather than the repeaters determining TOA, as in both Sanderford and Levinson, there is a TOA receiver that measures TOA for the signal that comes through the repeaters. Claim 4 is similar in this regard. Claim 7 also recites "a repeater through which the signal was received." The other independent claims are also similar.

The present invention presents a unique approach absent from both references. By putting the TOA measurement and the discriminator in the same location, the repeaters may be made less complex. Since there are more repeaters than there are Location Measurement Units, this may provide for a substantial reduction in cost.

35 U.S.C. § 103 Rejection

Sanderford, Levinson in view of Yun or Bishop

The Examiner has rejected other claims under 35 U.S.C. §103(a) as being unpatentable over Sanderford, Jr. et al., U.S. Patent No. 4,799,062 ("Sanderford") in view of Levinson et al., U.S. Patent No. 5,223,816 ("Levinson"), in further view of Yun. U.S. Patent No. 5,945,949 ("Yun") or Bishop, U.S. Patent No. 6,377,782 ("Bishop"). These rejections rely upon the Sanderford, Levinson rejection mentioned above.

Conclusion

Applicants respectfully submit that the rejections have been overcome by the amendment and remark, and that the claims as amended are now in condition for allowance. Accordingly, Applicants respectfully request the rejections be withdrawn and the claims as amended be allowed.

Invitation for a Telephone Interview

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

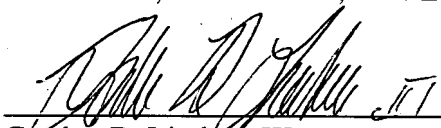
Request for an Extension of Time

Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,
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